



## Rick Hance Engineering Note

**Date:** 11/7/95  
**Rev Date:** 2/11/97, 9/13/99

**Project:** DZERO Solenoid Installation  
**Doc. No:** H951107A

**Subject:** Solenoid Energization Cost Estimate (Actual as of 9/13/99)

AC Distribution	Includes 400A disconnect switch, floor coring, cable tray across DAB, conduit run, 400A conductors. Materials (\$10K) & Labor (\$15K) to route power from utility entry room on 3rd fl. north to power supply room on 5th fl. south. Uses old SAMUS circuit.	\$25K
Cooling Water Extension	Materials & labor to route LCW from 6th fl. north side to 5th fl. south. (labor provided by D0. Estimate assumes pump capacity is adequate - will be verified later)	\$5K
Power Supply	150KW 5000A 15V supply recycled from SAMUS (\$0K), holec current transducer (\$15K), free wheeling diodes (\$1K), labor (\$3K).	\$19K
Filter	Coils recycled from CDF. Parts (\$1K), labor (5K)	\$6K
Dump Switch	Surplus from SCC - in possession and installed at DZERO. Materials required for mechanical and controls modification (\$1K)	\$1K
Dump Resistor	Materials (\$4K) and labor (\$1K) to fabricate and install at Fermilab.	\$5K
Reversing Switch	The switch and the labor for refurbishing is free (compliments of EED). Cost includes materials (\$1K) for refurbishing and labor (\$1K) for installation.	\$2K
DC Bus	Materials (\$12K) and labor (\$25K) to install, instrument and insulate the water cooled bus which runs from the power supply room on 5th fl. south to the collision hall and to the pit.	\$37K
Controls Chassis	Includes programmable controller, chassis, power supply, I/O cards, fast data collection card, networking and miscellaneous expenses.	\$20K
Interlocks and Quench Protection Chassis	Materials (\$15K) and labor (\$10K) to fabricate and install chassis' and spare, cable trays & etc.	\$25K
Miscellaneous	Hoses, fittings, switches, wiring, expendable material (\$5K) and labor (\$3K)	\$8K
<b>Total</b>		<b>\$153</b>